

surfaces. The frame-like margin has been made broad in order to allow greater freedom in use.

It may be safely claimed that this is the only set of reading types which has been made upon the same scientific basis that governs the types used in determining visual acuity, and therefore, by reason of this conformity, an examination of acuteness of vision and the determination of accommodative action by means of these two series, serve to place the results upon a uniform and proper foundation.

It is presented in the hopes that the advantages it may possess, shall make it of sufficient determinate value to be placed amongst the ordinary working materials required in ophthalmic practice.

James W. Queen and Co., of No. 924 Chestnut Street, Philadelphia, have kindly superintended the construction of the cards, and to them the author here desires to express his thanks for careful and satisfactory work.

ON THE POSSIBLE RETARDATION OF RETINITIS PIGMENTOSA.

By HASKET DERBY, M.D.,

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"PIGMENT degeneration of the retina is, as a rule, incurable; leading, despite all efforts in the way of treatment, to a steady decrease in vision, and entire blindness. Abstraction of blood, various derivatives, mercury, iodide of potash, iron, subcutaneous injections of strychnia, and the constant current are alike unavailing."¹

Thus wrote Leber in 1877. And in 1879 Zehender says, alluding to the effect of some of the remedies above mentioned, "The fact is that temporary improvement in central vision has sometimes been observed to follow the use of such treat-

¹ Græfe-Sæmisch. Vol. V. p. 658.

ment: but in no case was the improvement long maintained; and in no case, and through no remedy, has there resulted an even transitory improvement in excentric vision; an enlargement of the contracted visual field."¹

"Even temporary improvement," says Klein, writing the same year, "is produced by no known treatment."²

In 1884 Michel states "treatment is useless, save in syphilitic cases."³

Cases of retinitis pigmentosa occur, in American practice, with comparative infrequency. Among nearly thirteen thousand patients I have met the disease but twenty-seven times; giving a percentage of but 0.2. So restricted is therefore the experience of any individual practitioner, that any questions arising as to the probable course of the affection, in a given case, would be answered by reference to such authorities as I have just quoted. To the inquiry as to whether the use of such eyes may be permitted for purposes of study, no response whatever could be given; while that regarding possible treatment would be met by an unqualified negation.

In May, 1881, a boy aged three was brought to me from Western Virginia. For the past fifteen months the parents had observed that his vision seemed to grow imperfect as the day began to decline, and became much more so at night. He was a healthy, bright-looking child; but restless, and hard to examine. The ophthalmoscope was used with much difficulty, and seemed to reveal nothing. Central vision of course could not be estimated. There was no blood relationship on the part of the parents, and no history of blindness in the family.

In January, 1886, five years later, he came again accompanied by his sister, fifteen months younger than he: the lad being now eight years old and his sister about seven. Each of the children was night-blind, and each presented the usual ophthalmoscopic appearances of retinitis pigmentosa. The boy had vision, right, 0.2; left, a little less than 0.2; the girl

¹ Zehender. *Lehrbuch der Augenheilkunde*, p. 366.

² Klein. " " " p. 443.

³ Michel. " " " p. 589.

nearly 0.4 in each eye. In either case each visual field was of fair size, but unmistakably contracted from the normal, especially above and below.

In this connection I would call attention to the fact that the disease, in the boy's case, began to show itself before he was two years old; thus proving the untrustworthiness of the statement¹ that symptoms have never yet been manifested before the sixth year.

The two questions that form the subject of this paper were at once put me by the parents. How should these children be educated, and could they be treated?

As regards the latter my answer, according to the authorities quoted, should have been in the negative. But I happened to remember some cases reported in the year 1873 by Dor,² where the steady use of the constant current had produced a notable increase in the size of the visual field, as well as improvement in central vision, in three cases of retinitis pigmentosa. And in 1881, a paper³ was published by Mr. Gunn "On the continuous electrical current as a therapeutical agent in atrophy of the optic nerve, and in retinitis pigmentosa." He gives four cases of the latter disease in which this treatment was used, with notes of the improvement both of central vision, and of the visual field, in three. In two of these cases diagrams of the original and increased field are given. Mr. Gunn's theory of the action of the current is that it increases the conductivity of the optic nerve, and possibly temporarily dilates the retinal blood-vessels.

It is singular how little attention these observations have excited. Both Professor Dor and Mr. Gunn write now that they continue the use of the constant current in these cases. The former asserts that he obtains "either a constant and progressing amelioration, or at least a prevention of the natural increase of the disease." Mr. Gunn writes (June 14, 1886), "I have followed only one case of those I then published, and there the improvement has been, or rather was, when last

¹ Klein, l. c. p. 443.

² A. f. O. XIX, 3. p. 342.

³ Ophthalmic Hospital Reports, Vol. X. p. 161.

seen, permanent." He adds, however, his impression that this permanence will not continue; though the natural course of the disease would be delayed.

These children who were brought me this spring were taken from their studies during the early part of the treatment. For three months the constant current was applied three times a week, five minutes at a time; six to eight cells of a Stœhrer battery being employed. The electrodes were most of the time placed on the temples, but occasionally above, and even on, the eye.

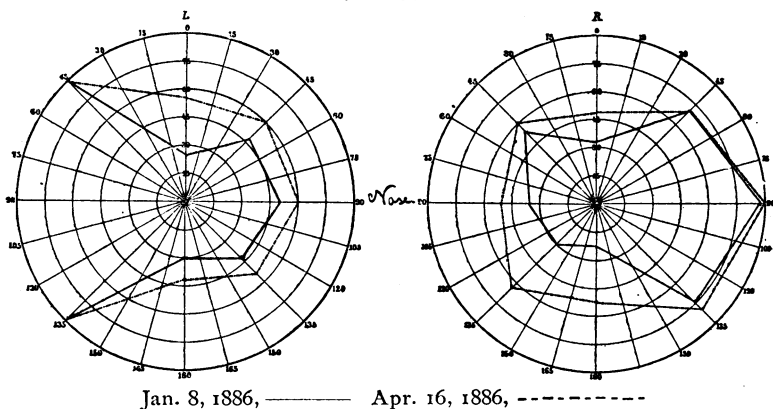
At the end of three months central vision was as follows:

In the case of the boy, right 0.3, nearly.
left 0.2;

thus showing very little change.

In the case of the girl, right 0.6, nearly.
left 0.6, "

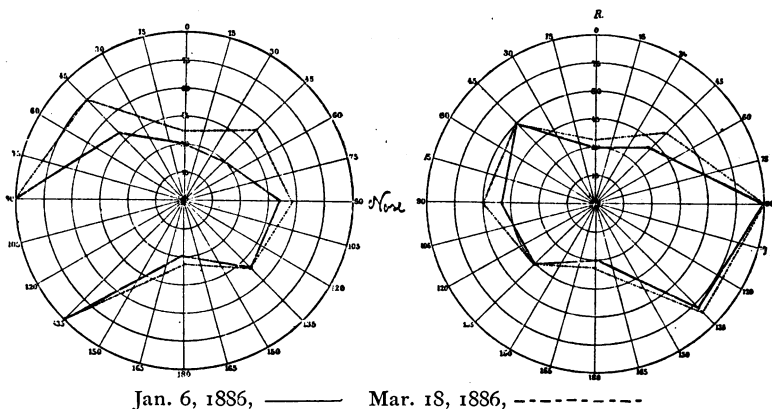
I.—Boy.



In either case there had been a decided improvement, according to the father, in the night-blindness; and as marked an increase in the size of each visual field. This is illustrated by diagrams I. and II. Measurements were made every three weeks, but the first and last are alone represented.

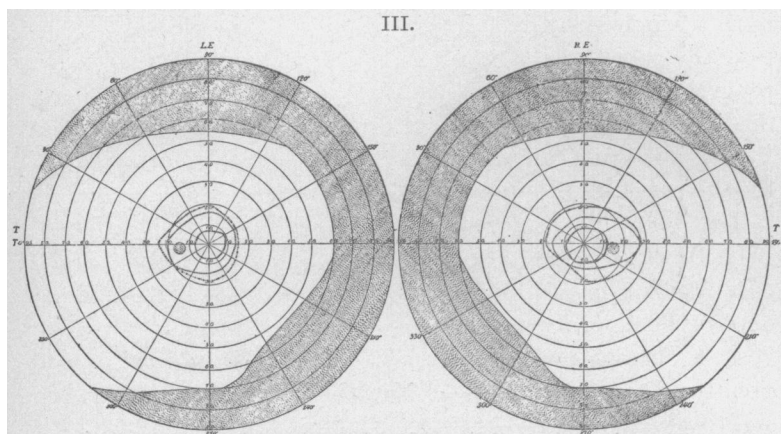
These results were reported in the spring to the New England Ophthalmological Society, and Dr. Standish has since kindly furnished me with the notes of a case treated by him in the same manner.

II.—GIRL.



April 14, 1886.—“Miss K. M., thirty-three years of age. Has worn glasses since she was seventeen years of age. Three months ago began to experience difficulty in going about after dark. Had noticed for several years that she did not see as well as others in the evening. Parents not related. Patient is the only child of her father's first marriage. Has several half-brothers and sisters who have never had any trouble with their eyes. In her mother's family several members were near-sighted. Vision, right, $\frac{1}{4}$: left $\frac{1}{8}$. The ophthalmoscope showed a number of characteristic star-shaped spots of retinitis pigmentosa in the periphery of the fundus of each eye. Constant current was used, once in eight days, for five minutes to each eye; the positive pole being applied to the closed eyelids. No other treatment was used. Each field enlarged, as will be seen by diagram III.; and the central vision increased, right, from $\frac{1}{4}$ to $\frac{1}{2}$; and left, from $\frac{1}{8}$ to $\frac{1}{4}$. Patient stated, on the occasion when the last field of vision was taken, that she was then able to tell the time by a tower clock, visible from her chamber window, and that for nearly a year previous to treatment she had been unable to do this.”

As Mr. Gunn very justly observes, the previous association of galvanism with charlatanism creates an instinctive prejudice against its employment, more especially in a disease which it has been customary to pronounce hopeless. But if the otherwise sure progress of retinitis pigmentosa can be merely



Apr. 14, ————— May 10, - - - - - June 26,

delayed; if the fatal ending can be deferred, and a certain amount of useful vision protracted, this treatment should be employed in every case. At all events, information on the subject should be carefully collected. Inclusive of those here presented, but ten cases of the use of the constant current, in this connection, have yet been reported. And the writer of this paper trusts that its lack of originality may be atoned for by the attention it seeks to attract anew to this subject.

But another object remains to be attained. What course is to be pursued with reference to the education of those in whom retinitis pigmentosa is diagnosed in early childhood? Shall they be kept from all use of the eyes on near objects? Shall moderate and frequently interrupted study be permitted? Or shall no attention be paid to the presence of the disease, and the education proceeded with as though nothing were the matter? Such are the questions proposed to me by the parents of these children. Our books give absolutely no suggestions on the subject. I appeal therefore to the experi-

ence of members of this Society. Have they followed any cases long enough to have formed an opinion?

So long as retinitis pigmentosa was looked upon as a disease incapable of being influenced as to its course or result, there seemed no reason why its victims should not get all the profit and enjoyment possible out of life, and employ the years during which sight remained to them in gaining all the education they could. But, with the possibility of retarding the progress by treatment, comes the opportunity of a properly directed hygiene. Is it unreasonable to suppose therefore that vision would fail less rapidly if the eyes are used sparingly for the purposes of study?

The following case seems to me to bear on this question.

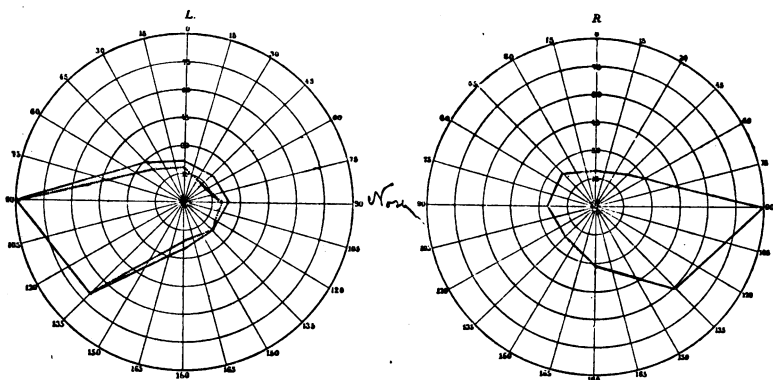
G. B. W., a lad of fourteen, came to me in July, 1881. The case was a typical one of retinitis pigmentosa, the pigment deposit being unusually profuse, the nerves muddy and the vessels small. Central vision in each eye 0.3. Each field greatly contracted. Physical condition perfect. The mother's sight was excellent. The father had posterior polar cataract in the right eye, divergent strabismus of the left. There were three other children, all of whom had divergent strabismus, but none any pigment deposits. Parents not related, but grandparents, on the father's side, were first cousins.

I advised non-use of the eyes for the present, and a course of electricity. The patient made but a short call, and promised to return for the purpose of allowing me to take a chart of each visual field, but failed to do so. He subsequently consulted two colleagues, one in Boston and one in New York, each of whom advised him to use his eyes freely. Acting on this he has gone through a course of study preparing him for admission to the Institute of Technology, which he proposes to enter this fall.

I saw him again in March, 1886. Vision, right 0.1; left, less than 0.2. Each visual field as in diagram IV. July 11th, vision of the left eye had fallen off to 0.1, and the field slightly contracted. He was sensible that he was rapidly becoming more "near-sighted," as he expressed it, and was observed to grope about for a door-handle, by daylight, the light being fairly good.

This case proves nothing. But it shows, under full study, what must be admitted to be an unusually rapid progress of the disease in a lad of nineteen. I cannot but think that, had my suggestions in 1881 been followed, his present condition would have been less deplorable.

IV.



Mar. 29, 1886, ————— July 10, 1886, - - - - -

DISCUSSION.

DR. LITTLE.—In 1877 I saw a case bearing upon this interesting paper. It was a case of retinitis pigmentosa in a deaf-mute. I saw the case in October, 1877. Right eye, V. = $\frac{20}{30}$; left eye, V. = $\frac{20}{30}$. There was a syphilitic history in this case. The study of the fields of vision was very difficult, he being a deaf-mute, but I do not think that there was any large amount of restriction. The point to which I desire to particularly refer is the influence of electricity in this case. I did not employ the constant, but the interrupted current. After two or three applications of the Faradaic current, the right eye gave V. = $\frac{28}{30}$; left eye, V. = $\frac{28}{30}$. The mixed treatment was also employed. In January, 1878, right eye gave V. = $\frac{28}{30}$; left eye, V. = $\frac{28}{30}$. There was a large opacity in the vitreous of the right eye. This opacity diminished under the use of the current. In April, 1878, right eye, V. = $\frac{33}{30}$; left eye, V. = $\frac{28}{30}$. In July, 1879, the same result was obtained. The young man then went on a ranche. In 1883 he was doing well, but did not see as well at night as before. The hearing also improved under treatment, from mere contact with the watch to two or three inches from the ear.

There is another condition which I have seen in the eyes of a patient at the Jefferson College eye clinic, in which the pigmentation had proceeded so far that the vitreous masses were also black. This I had never seen before. There was consanguinity in this case.

DR. FOX.—I have had an opportunity of treating a number of cases successfully. In my observations, I have found that it was the negative pole that produced good results. I also found that if, after three applications, there was no enlargement of the visual field and central vision was not improved, improvement would not take place. In one case, after discontinuing the treatment for eight months the improvement was still manifest. There was no retrogression of vision. In quite a number of these cases, in fact in all where the field of vision was enlarged, the blood-vessels seemed to increase in calibre and the night-blindness correspondingly diminished.

DR. HARLAN.—Within the past few weeks, I have been called upon to decide this question, whether or not the patient should use the eyes. It was the case of a boy of seventeen in whom the vision was failing quite rapidly. A sister, a few years older, had the same history. She had got along well with her school work until the age of about sixteen years, when she was obliged to give up. My faith in any plan of treatment being very weak, I advised that they should get as much good as they could out of the eyes while sight lasted. From the cases which I have seen, I think that there is likely to be a culmination of the disease about puberty. Out of a series of nine cases which I reported some years ago as the result of an examination of the inmates of a blind asylum, this was the case in four. It was the case in the two I have mentioned.

As regards the occurrence of the affection before the age of six years, I have the records of two cases in which it evidently was congenital. One was W. G., aged twenty-one, born blind; with slight perception of light, pupils contracted and pigment spots marked. The other was J. C., aged 19, has never seen better than at present. The pigment spots are marked, and there is peripheral contraction of the visual field.

DR. STRAWBRIDGE.—I should like to say a word with reference to the use of the electric current in the treatment of retinitis pigmentosa. I went over this subject ten years ago, and thoroughly tried electricity for several years. I never benefited a single case, and in some cases I think I did harm. The currents used were of moderate strength. There is a

certain number of cases where there is a weak nerve, where the stimulation by electricity is followed by exhaustion of the nerve and it does not come up to its former condition. I noticed this in several cases.

I place more reliance in occasional treatment by alteratives, such as small doses of bichloride of mercury and iodide of potassium, looking on these cases as largely the result of syphilitic taint, probably dating long back. This was the practical result of my experiments. If I should use electricity again, I should be very cautious how strong the currents were.

DR. THEOBALD.—I have had no experience in the use of the constant current, but I have seen temporary improvement follow the use of phosphate of iron, with quinia and strychnia. I have had one or two cases in which there was appreciable improvement, central vision becoming better than before treatment was instituted. One of these patients who was under my care when about eight years of age was seen within a few months. He is now a man, and retains sufficient vision to enable him to perform his duties as a travelling salesman. Recently there has been a slight decline in vision, and I have put him on the same course of treatment. There was no intermarriage in the case of the parents of this patient, but there was a history of trouble of a similar character in other members of the family.

DR. RISLEY.—In regard to the influence of treatment on the sharpness of sight and the field of vision in such cases, it seems to me that the administration of strychnia by hypodermic injection has produced marked improvement in some cases. As far as I know, it has never been permanent.

I have at present under observation two children, whose symptoms bear upon the point with reference to the age at which the disease appears. They were brought to me first several years ago. The oldest was between three and four years of age, when first seen. There was simply disturbance of sight, but the ophthalmoscope showed no pigment in the retina, but rather absorption of pigment. The child complained of headache and dreaded the light. In the course of the following year, pigment spots were seen in the periphery of the choroid. The President will recollect having seen the case within the past few months with a few pigment spots in the periphery.

When pigment was discovered, I directed that the younger child be brought to me. It was not two years of age. There was not the slightest disturbance of vision. There was the same unhealthy appearance of the eye grounds as seen in the

previous case, and the pigment had begun to be absorbed. The children have been brought from time to time, and within the past month the younger child has shown an evident increase in the trouble in the choroid and retina and the general disturbance of vision which was exhibited by the older child.

A young man with retinitis pigmentosa, with marked contraction of the field and asthenopia, partly depending on hypermetropic astigmatism, consulted me, and I put him on strychnia and bichloride of mercury, alternating with iodide of iron, etc. At the end of two years, there had been a very slight increase of the trouble. To relieve the asthenopia, I gave him a weak solution of eserine, which would simply contract the pupils without causing supra-orbital pain. Under its use, vision improved considerably. He has used eserine with more or less constancy for two years. He carries with him a weak solution, and when he is without it he is distinctly more uncomfortable.

DR. WADSWORTH.—I wish to speak of one case which bears upon the second point considered by Dr. Derby, *i. e.* the question of the advisability of cutting off work to save the eyes. It shows, in connection with the cases of rapid change reported, the variable course which the disease may pursue if left to itself. A young man, twenty-four years of age, a divinity student, was seen in 1873. He had typical retinitis pigmentosa so far as the ophthalmoscopic appearances were concerned. He had well marked night-blindness. The best vision, with —7, was $\frac{1}{100}$ in each eye. The field of vision was one and one-half inches in diameter at the distance of one foot. Yet he was studying German and Hebrew without trouble. He continued his work, and I saw him again eight years later. He had used his eyes freely, had graduated and had charge of a parish. His vision remained as before. The field of vision seemed to have narrowed, being not more than seven-eighths of an inch in diameter at one foot.